CLAIMS

What is claimed is:

1. A method for forming a magnetic head having an improved PtMn layer, comprising:

forming a PtMn layer using ion beam deposition;

forming an antiparallel (AP) pinned layer structure above the PtMn layer; and

forming a free layer above the AP pinned layer structure.

2. A method as recited in claim 1, wherein the AP pinned layer structure includes at least two pinned layers having magnetic moments that are antiparallel to each other, the pinned layers being separated by an AP coupling layer.

3. A method as recited in claim 1, wherein a dR of the head is at least 2% greater than a dR of a substantially similar head having a PtMn layer formed by plasma vapor deposition.

4. A method as recited in claim 1, wherein a dR of the head is at least 4% greater than a dR of a substantially similar head having a PtMn layer formed by plasma vapor deposition.

5. A method as recited in claim 1, wherein an easy axis coercivity (Hce) of the free layer is at least 5% less than an Hce of a free layer of a substantially similar head having a PtMn layer formed by plasma vapor deposition.

6. A method as recited in claim 1, wherein an easy axis coercivity (Hce) of the free layer is at least 10% less than an Hce of a free layer of a substantially similar head having a PtMn layer formed by plasma vapor deposition.

7. A method as recited in claim 1, wherein an easy axis coercivity (Hce) of the free layer is at least 15% less than an Hce of a free layer of a substantially similar head having a PtMn layer formed by plasma vapor deposition.

8. A method as recited in claim 1, wherein a hard axis coercivity (Hch) of the free layer is at least 10% less than an Hch of a free layer of a substantially similar head having a PtMn layer formed by plasma vapor deposition.

9. A method as recited in claim 1, wherein a hard axis coercivity (Hch) of the free layer is at least 15% less than an Hch of a free layer of a substantially similar head having a PtMn layer formed by plasma vapor deposition.

10. A method as recited in claim 1, wherein a hard axis coercivity (Hch) of the free layer is at least 20% less than an Hch of a free layer of a substantially similar head having a PtMn layer formed by plasma vapor deposition.

11. A method as recited in claim 1, wherein each of the layers above the PtMn layer is formed by plasma vapor deposition.

12. A method as recited in claim 1, wherein each of the layers in the head is formed by ion beam deposition.

13. A head formed by the process recited in claim 1.

14. A head as recited in claim 13, wherein the head forms part of a GMR head.

15. A head as recited in claim 13, wherein the head forms part of a CIP GMR sensor.

16. A method for forming a magnetic head having an improved PtMn layer, comprising:
forming seed layers;
forming a PtMn layer above the seed layers using ion beam deposition;
forming an antiparallel (AP) pinned layer structure above the PtMn layer;
forming a free layer above the AP pinned layer structure;
forming a spacer layer above the free layer; and
forming a bias layer above the spacer layer.

17. A head formed by the process recited in claim 16.

18. A magnetic storage system, comprising:

magnetic media;

at least one head for reading from and writing to the magnetic media, each head having:

a sensor formed at least in part by the process recited in claim 1;

a write element coupled to the sensor;

a slider for supporting the head; and

a control unit coupled to the head for controlling operation of the head.